

## **METHOD FOR CREATING BARRIER LAYERS FOR COPPER DIFFUSION**

### **ABSTRACT OF THE DISCLOSURE**

A method for forming damascene interconnect copper diffusion barrier layers  
5 includes implanting calcium into the sidewalls of the trenches and vias. The calcium  
implantation into dielectric layers, such as oxides, is used to prevent Cu diffusion into  
oxide, such as during an annealing process step. The improved barrier layers of the  
present invention help prevent delamination of the Cu from the dielectric.